

## CLAIMS

1. An apparatus for generating X-rays by irradiating a  
5 target with an electron beam, comprising vibration applying  
means for vibrating said target in directions parallel to a  
surface thereof.
2. An apparatus as defined in claim 1, wherein said vibra-  
10 tion applying means is arranged to vibrate said target so  
that said electron beam has a colliding spot describing, on  
said target, one of a linear track, a circular track, and a  
two-dimensional shape including zigzag and rectangular  
shapes.
- 15 3. An apparatus as defined in claim 1, further comprising  
the vibration controller for controlling said vibration apply-  
ing means based on one of a tube voltage, a tube current, an  
electron beam diameter, and a temperature measured adja-  
20 cent a spot of electron beam collision.
4. An apparatus as defined in claim 3, wherein said vibra-  
tion controller is arranged to control the vibration amplitude  
more than the electron beam diameter and variable.

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5. An apparatus as defined in claim 3, wherein said vibration controller is arranged to make the vibration frequency variable.
- 5 6. An apparatus as defined in claim 1, wherein said vibration applying means includes a piezoelectric device.
7. An apparatus as defined in claim 6, wherein said piezoelectric device is integrated with a holder having said  
10 target to define a closed space.
8. An apparatus as defined in claim 1, further comprising flexures for attaching and supporting said holder.
- 15 9. An apparatus as defined in claim 8, wherein said flexures are made by electrical discharge machining.
10. An apparatus as defined in claim 1, wherein said target is vacuum-sealed by rubber elements or flexures.  
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11. An apparatus as defined in claim 1, wherein said target has a thickness up to twice depth of electrons penetration calculated from a tube voltage and said target material.
- 25 12. An apparatus as defined in claim 1, wherein said vibra-

tion applying means is arranged to displace said target.

13. An apparatus as defined in claim 1, wherein said vibration applying means is disposed in an bore in which said  
5 target is located.

14. An apparatus as defined in claim 8, wherein said flex-  
ures are shaped thin in a direction of vibration of said target,  
and thick in a direction perpendicular to the direction of  
10 vibration.

15. An apparatus as defined in claim 1, wherein said target  
has a thickness corresponding to a diameter of collision of  
said electron beam.

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16. An apparatus as defined in claim 1, wherein said target  
is disposed at an angle to said electron beam.